Space Weather Forecast

Issued on Saturday, 05 February 2022 at 13:14 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate flares throughout. Chance of isolated Minor Storm activity today (05 February).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: There are currently five numbered sunspot regions. Solar activity was low, with a number of Common class flares observed. The majority of the flares were from AR2936, a large, complex and mature region nearing the northwestern limb. The largest flare was long duration, peaking at 04/1551 UTC. A CME was generated from this event, which has been analysed and shows a clear miss of Earth. AR2938 remains a small and simple group. AR2939, AR2940 and AR2941 are generally large or elongated regions, with moderate magnetic complexity. A new unnumbered sunspot has developed to the south of AR2939, which is currently small and stable.

Solar Wind / Geomagnetic Activity:
The solar wind started the period at elevated levels, with a peak of 527km/s at 04/1347 UTC, due to the influence of the CME, which arrived on 01 February, before declining to slightly elevated levels from 04/2000 UTC to 05/0800 UTC, increasing to the current elevated conditions, with speeds currently between 500-550 km/s, probably due to connect with a fast wind from a coronal hole. The magnetic field strength was Moderate throughout. The all important north-south component was predominately negative southwards). These observations suggest that the Earth was under the influence of the trailing magnetic cloud from the CME, which arrived on 01 February, with embedded structures resulting in the fluctuations of the solar wind parameters. Geomagnetic activity was mostly Unsettled to Active (Kp 3-4), but with G1/Minor Storm (Kp 5) conditions 04/1500-2100 UTC. Geomagnetic activity is currently at Quiet (Kp2) conditions, observed at 05/0600-1200 UTC.

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly low, with a chance of moderate class flares and a very slight chance of strong flares.

Solar Wind / Geomagnetic Activity: Solar winds are likely to be at elevated levels during today (05 Feb) due to a fast wind arriving from a coronal hole. Further coronal hole influence is anticipated day 2 (06 Feb). Geomagnetic activity is expected to be Unsettled to Active today, tomorrow and day 3 (7th) but with isolated Minor Storm intervals likely today (05 Feb), reducing to a chance tomorrow (06 Feb) and a slight chance for day 3 (07 Feb). Day 4 (08 Feb) activity is expected to return to Quiet to Unsettled conditions.

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) is

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forecast to remain at background levels whilst the current sunspots remain quiet and stable, with no radiation storms currently expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	60	40	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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